REMARKS

The present application was filed on October 12, 2001 with claims 1-27. Claims 1, 14 and 27 are the independent claims.

In the final Office Action, the Examiner: (i) maintains the rejection of claims 1, 3, 14, 16 and 27 under 35 U.S.C. §103(a) as being unpatentable over D. Mishra, "SNOOP: An Event Specification Language for Active Database System," Thesis from University of Florida, 1991 (hereinafter "Mishra") in view of U.S. Patent No. 6,006,213 to Yoshida (hereinafter "Yoshida"); (ii) maintains the rejection of claims 2 and 15 under 35 U.S.C. §103(a) as being unpatentable over Mishra in view of Yoshida in further view of U.S. Patent No. 5,345,380 to Babson et al. (hereinafter "Babson"); (iii) maintains the rejection of claims 4-7, 11, 13, 17-20, 24 and 26 under 35 U.S.C. §103(a) as being unpatentable over Mishra in view of Yoshida in further view of U.S. Patent No. 6,249,755 to Yemini et al. (hereinafter "Yemini"); (iv) maintains the rejection of claims 8-10, 12, 21-23 and 25 under 35 U.S.C. §103(a) as being unpatentable over Mishra in view of Yoshida in view of Yemini in further view of Bettini et al., "Testing Complex Temporal Relationship Involving Multiple Granularities and Its Application to Data Mining," ACM 1996 (hereinafter "Bettini"); and (v) rejects claims 28 and 29 under 35 U.S.C. §103(a) as being unpatentable over Mishra in view of U.S. Patent No. 6,108,698 to Tenev (hereinafter "Tenev").

In this response, Applicants traverse the various §103(a) rejections for at least the following reasons.

Regarding the §103 rejection of claims 1, 14 and 27, Applicants again respectfully assert that the Mishra/Yoshida combination fails to teach or suggest each and every limitation of the claimed invention.

For example, as recited in amended independent claim 1, a computer-based method for use in accordance with an event management system comprising the steps of automatically generating one or more event relationship networks from event data, wherein an event relationship network comprises a graphical representation wherein nodes represent events and links connect correlated nodes, and utilizing the one or more generated event relationship networks to construct one or more correlation rules for use by a correlation engine in the event management system. Independent claims 14 and 27 recite similar limitations.

The present specification explains, by way of example at page 7, line 6-10, that the approach taken by the present invention is to describe correlation logic uses a conceptual framework called event relationship networks or ERNs. In one embodiment, an ERN is a directed cyclic graph. Nodes are events and are labeled with the role of the event within the case. Arcs or links from one event to the next indicate that the latter is associated with or correlated with the former. Furthermore, as the Abstract of the present application states, in conventional approaches, ERNs are constructed purely based on human expertise and there is no automatic or event semi-automatic method that validates or completes ERNs. The present invention provides techniques for automatically validating and completing existing ERNs and/or constructing new ERNs, based on collected event data.

The Mishra/Yoshida combination does not disclose automatically generating one or more event relationship networks from event data, wherein an event relationship network comprises a graphical representation wherein nodes represent events and links connect correlated nodes, as in the claimed invention.

The final Office Action cites the "event compiler" and "event graph" on pages 57 and 58 of Mishra in support of rejecting the claimed step of automatically generating one or more event relationship networks from event data, wherein an event relationship network comprises a graphical representation wherein nodes represent events and links connect correlated nodes. However, the event graph of Mishra is not an event relationship network that can be used to construct one or more correlation rules for use by a correlation engine in an event management system, as in the claimed invention. In fact, as explained at page 57 of Mishra, a rule is actually the input for the graph building algorithm. Then, as explained at page 58, in the event detection technique of Mishra, it is assumed that a event graph already exits and Mishra is detecting instances of the event graph. Thus, this is significantly different than what is claimed.

The Examiner explains in the "Response to Arguments" section of the final Office Action (page 2) that Mishra teaches taking an original rule and creating a "Rule-b" using a constructed tree. Even if this were accurate (which Applicants assert is not the case), such a process does not disclose the steps of the claimed invention. Again, the claimed invention <u>generates one or more event relationship networks from event data</u>, and <u>utilizes the one or more generated event relationship</u>

networks to construct one or more correlation rules. By any interpretation of Mishra, this is not what the "event compiler" and "event graph" of Mishra do.

For at least the above reasons, independent claims 1, 14 and 27 are patentable over the Mishra/Yoshida combination. Further, dependent claims 2-13 and 15-26 are also patentable over the Mishra/Yoshida combination and the further combinations with Yemini, Babson and/or Bettini not only for the above reasons, but also because such claims recite patentable subject matter in their own right. Yoshida, Yemini, Babson and Bettini do not remedy the above-described deficiencies.

Applicants added, in their previous response, new claim 28 which recites that the automated generation of at least one of the one or more event relationship networks comprises use of an automated pairwise statistical correlation procedure which is configured to compute a first correlation metric and a second correlation metric, the second correlation metric being representative of a correlation between events that is stronger than a correlation between events represented by the first correlation metric. Support for this feature may be found throughout the present specification, by way of example, see page 7, lines 1-3, as well as the further descriptions of the "weak correlation" metric and the "strong correlation" metric in the detailed description.

Further, new claim 29 was also added and recites that the automated generation of at least one of the one or more event relationship networks comprises specifying an event data window within which event data is considered. Support for this feature may be found throughout the present specification, by way of example, see page 14, lines 5 and 6, as well as the further descriptions of the "window length *w*" in the detailed description.

In the final Office Action, the Examiner has introduced the Tenev reference in combination with Mishra to reject new claims 28 and 29. In particular, the final Office Action points to column 9, lines 32-45, of Tenev to reject claim 28 and column 13, lines 28-39, of Tenev to reject claim 29.

Column 9, lines 32-45, of Tenev read:

FIG. 6 illustrates features of directed graph data structure 330 that are relevant to the operations performed by grapher routines 320 in relation to the expansion flags.

Identifier (ID) mapping structure 350 maps from element IDs to pointers. The element IDs include node IDs and link IDs. Structure 350 makes it possible for every node and link in memory to be specified by an ID which can be validated in constant time and nearly always created in constant time; structure 350 avoids the need to use pointers except within directed graph data

structure 330. Although implemented as two arrays of pointers, one indexed by the node IDs and the other by link IDs, structure 350 could also be, for example, a lookup table in which each entry includes an ID and a pointer.

No where does this portion of Tenev or any other portion of Tenev teach or suggest computing a first correlation metric and a second correlation metric, the second correlation metric being representative of a correlation between events that is stronger than a correlation between events represented by the first correlation metric, as in claim 28. In fact, Applicants fail to see any discussion whatsoever in Tenev regarding such correlation metrics.

Further, column 13, lines 28-39, of Tenev read:

FIG. 9 shows a sequence of representations of the graph shown in box 202 in FIG. 4 that could be presented as a result of operations like those described above in relation to FIG. 7, without creating or removing any nodes. Each representation could result from a respective iteration in FIG. 7, either an iteration through boxes 364 through 382 in response to an expand signal or an iteration through boxes 390 and 392 in response to a contract signal. In each representation, a node feature with a "+" indicates that the represented node is contracted in the tree, while a node feature with a "-" indicates that the represented node is expanded in the tree.

No where does this portion of Tenev or any other portion of Tenev teach or suggest specifying an event data window within which event data is considered, as in claim 29. The "+" and "-" mentioned above in Tenev relate to the graph itself and not to any event data or an event data window within which event data is considered, as claimed.

In view of the above, Applicants believe that claims 1-29 are in condition for allowance, and respectfully request withdrawal of the §103(a) rejections.

Respectfully submitted,

William E. Lewis

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William E. Lewis
Attorney for Applicant(s)
Reg. No. 39,274
Ryan, Mason & Lewis, LLP
90 Forest Avenue
Locust Valley, NY 11560
(516) 759-2946